

Implementation and low power test of 3rd harmonic cavity proto type for Korea-4GSR

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Korea 4th Generation Synchrotron Radiation Accelerator(Korea-4GSR), aim to achieve a 4GeV ultra-low emittance beam with a current of up to 400 mA to enhance beam brightness. However, lowering the beam emittance increases the electron density within the bunch, which in turn reduces the beam lifetime due to Touschek scattering and intra-beam scattering. Therefore, to reduce the electron density within the bunch, we considered the application of a normal conducting 3rd harmonic cavity with a 1.5 GHz operating frequency and proceeded with prototype development. The developed harmonic cavity was designed based on the Spanish ALBA model, with design modifications for cooling and mechanical parts. In this presentation, the design, fabrication, and low power test results of the harmonic cavity were described. With future performance validation and improvements, it is anticipated that this cavity could be utilized not only in the 4GSR but also in other accelerators with similar specifications.

Contribution track

ICABU WG1. Accelerator Systems

Paper submission Plan

Best Presentation

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